

## Description of new species of Apodal Fishes in the Museum of the Academy of Natural Sciences, of Philadelphia.

BY CHARLES C. ABBOTT.

Genus HERPETOICHTHYS, Kaup.

*Diagn.* Jaws nearly equally long. Snout short. Gullet wide. Eyes near the end of the snout. Head depressed, so that the eyes are nearer the upper surface than they are distant from each other laterally. Anterior nostril tubular at the extremity of the snout, and the hinder one at the commencement of the outer row of palatine teeth. Between the two, on the border of the upper lip, there is a small cutaneous tag. Pectoral fins moderately short. Six or seven nasal teeth, and from nine to thirteen vomerine ones.

1. *Herpetoichthys callisoma*, Abbott.—*Spec. char.* Head depressed; the facial outline slightly oblique, and without curvature. The jaws are flattened, and the snout terminates in a rather obtuse point. The eyes are large, longitudinally oval; the diameter of the orbits entering three times in the length of the side of the head, measuring from the angle of the jaws. The gill-opening is large and perpendicular; it is situated as much more posteriorly to the extremity of the snout, as anteriorly to the commencement of the dorsal fin, as four is to one. The dorsal fin arises nearly opposite to the tips of the rays of the pectoral, when it is extended backwards, and reaches to within a short distance of the extremity of the tail; it retains a uniform height until it nears the posterior eighth of the total length, when it rapidly decreases to its termination. The anus is situated slightly posteriorly to the anterior third of the total length; and, at its posterior margin the anal fin originates, and from thence proceeds the lower surface of the body, and is co-terminal with the dorsal fin.

The teeth upon the mandible and palate are biserial; the dentition elsewhere is uniserial. Nasal teeth eight; compressed, blunt, inwardly directed; four are upon the mesial line, the anterior two smaller than the others. Vomerine teeth eleven; these form a nearly straight line, and have the anterior six somewhat larger than the other five. Palatine teeth upon the outer row eleven; upon the inner row ten; they are similar to the nasal teeth. Mandibular teeth similar in shape to the nasal teeth, sixteen upon the outer row; ten upon the inner row.

*Color.* The head, and that portion of the back anterior to the pectoral fins, is dull brown, with a purple tint. On a line with the angle of the mouth, extending as far back as the base of the pectorals, this color is uniform, but below this line it becomes much paler and white, in irregular patches. Upon the head and neck there are numerous circular blackish spots, which occasionally run into each other, forming irregular blotches. The throat is longitudinally marked with slender black lines, which extend nearly parallel, and reach the base of the pectorals. The ground color of the body is a uniform yellowish-brown, lighter on the belly; along the sides, from the pectoral fin to the termination of the dorsal, are large, circular, equidistant, very deep brown spots, their diameter equal to two-thirds of the width of the body. Above and between the large lateral spots, exists a regular row of smaller, but similarly shaped spots; the first two commencing anteriorly to the insertion of the dorsal fin, and nearly joining upon the back. Beneath and between the large lateral spots are smaller ones of a similar shape; these are irregular in their position and number, and differ materially, in many respects, on the two sides of the body. The dorsal fin is white, marked with irregular spots, of a color similar to those upon the body. The anal fin is similar in its coloration to the dorsal. The pectorals have a number of very minute dots upon them.

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A row of circular spots commences on the belly, near the pectoral fins, and extends to the anus.

Total length, 38 inches. To anus, 13 inches.

*Habitat.* Pacific Ocean? Cabinet of the Academy.

A single specimen of this magnificent fish is in the collection presented by W. G. Burke, Esq. This specimen, at first glance, would not appear to belong to the genus *Herpetoichthys*; but the slight variations are not sufficient to refer the species to any other genus. The exact locality from which the species was obtained is uncertain, but various circumstances induce me to suspect it is a species belonging to the Pacific fauna.

#### Genus *PISOÖDONOPHIS*, Kaup.

*Diagn.* Teeth short, conic, and more or less blunt. Anterior nostril tube well developed, and approximating the corner of the mouth. Pectorals more or less fully developed.

2. *Pisoödonophis magnifica*, Abbott.—*Spec. char.* Head small, facial outline with an oblique curvature; the snout rather obtuse, with the upper jaw extending much beyond the lower, making the nasal teeth visible when the mouth is closed. The body is perfectly cylindrical, and tapers very gradually to the tail, which terminates in a conico-acute horny point. The dorsal fin has its anterior insertion at the occiput, and the fin terminates before it reaches the horny extremity of the tail. The anal fin is coterminous with the dorsal. The pectoral fin is small, circular, with twenty rays. The teeth are all very small, conical, and acute, six standing irregularly on the disc of the nasal bone. The teeth upon the palate, vomer, and mandible are biserial, and placed very close to each other. Palatine teeth ; vomerine teeth

*Color.* In alcoholic specimens, the ground color of this fish is pink, darkest upon the back, and nearly lost upon the belly, which appears white, without close inspection. At the base of the anterior nasal tubes are two very small dark chocolate-brown, semicircular spots; behind these, and anterior to the orbits, are situated two similar markings, but larger, and little deeper in color. Commencing at the insertion of the dorsal fin are two series of spots of chocolate color, separated only by that fin; these spots, if viewed from above, have the appearance of transverse bands. These spots are not, in every case, directly opposite, but they are generally so. Upon the sides is a single series of spots, of the tints of the dorsal markings, which are two-thirds of the width of the sides, measuring from the base of the dorsal to the centre of the belly. Upon the belly are three rows of small, circular spots, which are very irregular as to position.

Total length, 19 inches. To anus, 8 inches. To gill-opening,  $1\frac{1}{2}$  inch.

*Habitat.* Sandwich Islands.

The Museum of the Academy contains two specimens, which were collected and presented by Dr. J. K. Townsend.

3. *Muraena acutirostris*, Abbott.—*Spec. char.* Head much compressed; the facial outline moderately oblique; the jaws greatly attenuated, very slender; the lower mandible somewhat the smaller, with a gentle upward curve at its extremity. The fold of the skin, enveloping the dorsal fin, is unusually thin, and arises within a short distance of the occiput, with a slope of about forty-five degrees. The fin is equal in width to seven-eighths of the width of the body, and has no perceivable decrease until it approaches the posterior eighth of the body, when it decreases rapidly, and at its termination is only equal to one-seventh of the width of the fin upon the back. The eye is large, circular, its diameter equal to one-fifth of the length of the side of the head, measuring from the angle of the jaws; the orbits are one diameter

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distant, and the distance from the upper edge of the orbit to the facial outline is equal to the distance between the lower margin of the orbit and free edge of the upper lip. The gill-opening is rather small, oblique, situated as far posteriorly to the commencement of the dorsal fin as that is posterior to the angle of the jaws. (The pores upon the snout and lateral line, in this specimen, are not visible.)

The teeth are uniserial, compressed, and very acute; the palatines, vomerine, and mandibular teeth all inwardly directed. Nasal teeth fourteen; widely set, and from three to five minute teeth between each pair. Three teeth are placed upon the mesial line; the second one very slender, and the longest tooth in the mouth; the third is twice as great in circumference, and but little shorter than the second tooth. Twelve compressed, acute teeth are situated upon the vomer, in a direct line; the anterior tooth much the largest. Palatine teeth, thirteen, of a uniform size; the series commencing below the centre of the orbit and terminating shortly anteriorly to the angle of the jaws. The mandible is armed with twenty-six teeth upon each side; the anterior four of each side being nearly three times as great in size, more widely set, and the posterior pair have a single, compressed, very small tooth between them.

*Color.* The ground color of this species is a dark hair brown, nearly black upon the occiput and cheek, and along the base of the dorsal fin. The head, body, and both fins are irregularly reticulated with narrow bands of white, varying in width and becoming yellow on the posterior fifth of the dorsal fin, and upon that portion of the body, but in a less degree. Three broken lines of black extend along the body, from the angle of the jaws to the gill-opening. Iris chrome yellow. Total length  $19\frac{1}{2}$  inches. To anus 9 inches. To gill-opening  $2\frac{3}{4}$  inches.

*Habitat.* Sandwich Islands.

A single specimen of this peculiar *Muræna* was brought from the above locality, and presented to the Academy, by Dr. J. K. Townsend, to whom the Academy is indebted for many species of fishes, which enrich their ichthyological cabinet.

The peculiarity of this *Muræna*, which immediately falls under the notice of the ichthyologist, is the remarkably slender snout; which consequently gives the dentition an unusual aspect, in crowding the marginal nasal teeth and those upon the mesial line into close proximity; and the vomerine teeth so close to the palatines. The great acuteness of the teeth in every series, their close proximity, and inward direction, give this species a ferocious appearance, which certainly must be realized by every unfortunate fish, whose fate it is to be mangled by his jaws.

4. *Thyrsoidea Kaupii*, Abbott.—The genus *THYRSOIDEA* differs from *Muræna* by having the palatine teeth biserial.

*Spec. Char.* Head, facial outline, and general characters of the jaws, except their less tenuity, similar to *Muræna acutirostris*, Abb. The fold of the skin, enveloping the dorsal fin, is thick on the anterior portion of the fin, and prevents the rays from being felt. The commencement of the dorsal fin is twice as far distant from the gill-opening, as from the angle of the jaws. The eye is large, longitudinally oval; its longitudinal diameter entering four times in the length of the side of the head, measuring from the angle of the jaws. The anterior nostrils are furnished with long slender tubes, which extend to the free margin of the lip; the posterior nostrils are not tubular. The anus is situated two inches anteriorly to the centre of the total length. The body, posteriorly to the anus, tapers slowly to the extremity of the tail, which is very acute.

The nasal teeth number twelve; they are tall, slender, inwardly directed, with two very minute teeth between nearly every pair. Two teeth, similar to the marginal nasal teeth, stand upon the mesial line, and are the tallest teeth

in the mouth. Seven short-conical, rather blunt teeth, with the anterior two twice as large as the others, stand upon the vomer; the anterior second tooth a little beyond the line of the others, otherwise they form a straight series. The palatine teeth number twelve or thirteen; they are very much compressed, acute, are set near to each other, and are inwardly directed; these form the outer and principal series. Two much larger ones, very near the commencement of the outer series, and within that series, form the interior row. This inner row is similar in its characters, except as to number, to the outer row of palatines. The mandible is armed with a complement of twenty-two, short, compressed teeth, all inwardly directed; the six upon the extremity of the jaw, are three times as great in length, as the principal series, and between them is generally a pair of minute teeth, which are hidden by the lip, and often entirely concealed in the soft parts of the jaw.

*Color.* The head and body are of a uniform dark umber, the back and sides crossed by coarse reticulations of bright sienna. The fins are nearly black, with the reticulating bands that cross the body, continuous upon them. The head is free from the bands of sienna, as is the throat and a small anterior portion of the belly. Upon the throat and sides of the neck are narrow longitudinal black lines, extending as far back as the gill-opening.

Total length 18 inches. To anus 8 inches. To gill-opening 2 1-5th inches.

*Habitat.* Sandwich Islands.

This handsomely marked species of *Thyrsoidea* has every appearance of a *Muraena*, and unless closely examined might be referred that genus. The presence of the inner row of palatine teeth, however, preclude the propriety of its being so classed. This species belongs to that class of the genus, which has but two teeth upon the inner row of palatines; a peculiarity which is of too slight importance to be considered generic, and is too constant to be considered specific. The specimen from which the description was taken, was presented to the Academy by Dr. J. K. Townsend.

This species is named in honor of Dr. J. J. Kaup, of Darmstadt, to whom science is indebted for the first systematic elucidation of the history of the Apodal Fishes.

5. *Thyrsoidea eurosta*, Abbott.—*Spec. char.* Head large, depressed: the facial outline very slightly oblique. The fold of the skin enveloping the dorsal fin is very thick, and arises slightly behind the occiput, nearly perpendicularly; the fin is of uniform height for two-thirds of its length, when it slowly decreases to its termination. The eye is large, circular, and slightly behind the extremity of the snout; the orbits are one diameter and a half distant. The jaws are of equal length, and rather slender; the lower jaw with a slight upward curve at its extremity, making the large mandibular teeth partially visible when the mouth is closed. The nasal teeth number ten; they are biserial, and the inner row are twice as large in every respect as the outer row; they are conical, acute, and with a decided inward inclination. The palatine teeth number twenty-eight upon the outer row; and nine upon the inner row. The teeth constituting the outer row of palatines are short, very much compressed and acute; they have a moderate inward inclination. The inner row of palatines are widely set, of various lengths, and have a gap in their series, commencing posteriorly opposite the posterior margin of the orbit, and ceasing opposite the anterior edges of the orbit; the teeth upon the inner series are more than twice as large in all respects as those of the outer row. The vomerine teeth number twelve, nine of which are in a direct line, and the remaining three concurrent with the central three of the series. The lower jaw is armed with a complement of twenty-four compressed, acute teeth, having a decidedly inward inclination; the posterior twelve of these are closely set, and in an unbroken series; the anterior twelve are arranged in pairs, except at the extremity of the jaw, where they form two square patches of four teeth each.

*Color.* The body and head are of a uniform reddish brown, which become

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nearly black upon the under surface of the tail. The whole surface is minutely spotted, and reticulated with pale yellowish.

Total length, 13½ inches. To anus 6 inches. To gill-opening 1½ inches.

*Habitat.* Sandwich Islands.

This species is remarkably stout for its length, and presents an unusually large number of teeth for the size of the animal. But a single specimen is in the museum; which specimen was collected and presented by Dr. J. K. Townsend.

6. *Thyrsoidea concolor*, Abbott.—*Spec. char.* Head compressed, slightly depressed upon the occiput; jaws slender. The eye is large, circular, its diameter contained four times in the length of the side of the head, measuring from the angle of the jaws. The dorsal fin originates at the occiput, and has a slope at its commencement, of about forty-five degrees, the fin is of a uniform height, until midway between the anus and the extremity of the tail, when it commences gradually to decrease. The anus is slightly anterior to the centre of the body, and the anal fin, that there has its commencement, is equal in width to one-tenth of the width of the body, and extends to the extremity of the tail, preserving throughout a nearly uniform width.

The nasal teeth number twelve; they are all slender, conical and acute, with a pair of minute, compressed teeth between each pair of the marginal teeth; three teeth stand upon the mesial line, the centre one of which is the tallest tooth in the mouth. The outer row of the palatine teeth number sixteen; they are of uniform height, compressed, acute and with an inward tendency. The inner row consists of two teeth, placed at the commencement of the outer row; they are similar in all their characters to the teeth upon that row, except in being of nearly triple the height. On the vomer, exist ten conical, acute teeth, in a straight line; they are of a uniform size. The mandible is armed with a complement of twenty compressed, acute teeth, having a decided inward inclination, but in a less degree than in the palatines; the anterior six teeth are much larger than the general series, and are more conical in their shape.

*Color.* The head, body and fins are of a uniform purplish brown, varying in its intensity upon the sides.

Total length, 11 inches. To anus 5½ inches. To gill-opening 1½ inches.

*Habitat.* Vera Cruz.

A single specimen is in the museum, presented by Dr. Burroughs, and labelled as procured at the above locality.

NOTE.—On pages 326 and 327, *hujus operis*, there are described two *Eltheostomoids*, named respectively—*Pæcilosoma transversum* and *Pileoma cymatogramma*.

As the name *Pæcilosoma*, has been changed to *Pæcilichthys*, the name of the species will hereafter be

*Pæcilichthys transversus*, Abbott.

Syn. *Pæcilosma transversum*, Abbott, Proc. Acad. Nat. Sci. Phila. 1860, p. 326.

As the genus *Percina*, Hald. is congeneric with *Pileoma*, De Kay; and is prior to that genus, the species described as *Pileoma cymatogramma*, Abb. will hereafter be

*Percina cymatogramma*, Abbott.

Syn. *Pileoma cymatogramma*, Abbott, Proc. Acad. Nat. Sci. Phila. 1860, p. 327.

NOTE.—On page 365, *hujus operis*, for the figure 13, given as the number of rays of the anal fin, in *Astroscopus guttatus*, Abb., please substitute the figure 19.

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